

Saratovskii gosudarstviennyi universitet im. Chernyshevskovo.

The forest on the sample plot itself was composed mainly of pedunculate oak (*Q. robur* L.) with a significant addition of small-leaved lime (*Tilia cordata* Mill.), silver birch (*Betula verrucosa* L.) and three:

Seasonal Peculiarities in Settledness of Common

Field-Mice (*Apodemus s. Sylvaticus* L.) and

Redbacked Voles (*Clethrionomys Glareolus* L.) in the

species of maple: silver maple (*A. platanoides*), common maple (*A. campestris*), and

Voronezh Reserve (Zapovednik).

very seldom Tartarian maple (*A. tarticum* L.). The underbrush consisted mainly of

pedunculate oak, silver maple, small-leaved lime, mountain ash (*S. aucuparia* L.) and shrubs - hazelnut (*C. avellana* L.) warty-barked spindle-tree (*Euonymus verrucosus* Scopoli) and spindle tree (*E. europaea* L.). The

ecology of common field-mice and redbacked voles. Our observations conducted in the Voronezh Reserve (zapovednik) allowed us to determine

grass cover with a predominance of ivy was very sparse. Frequent were:

the peculiarities of settledness of these rodents during the spring-

summer and fall periods.

crown vetch (*Coronilla coronata* L.), seal (*Polygonatum multiflorum* Moench), wonder violet

In 1953 a sample plot of one hectare was established in 547

(2) Kvartal in an oak forest from 100-150 years old, and in 1955-1956

sedge (*Carex hirta* L.); more rare appeared to be: orchid (*Plantanthera sp.*)

a study was conducted in kvartal 288, in an oak forest of the same age.

bitter pea (*Lathyrus vernus*), and hedge woundwort (*Stachys sylvatica* L.).

Live traps were placed every 10m. in a checkered pattern. Rye bread with

The forest floor was covered with numerous windfalls and a great number

salted butter was used as bait. Dry leaves were put in the nest compartments for warmth.

and also in many other places on the same plot.

The sample plot in kvartal 288 was surrounded on three sides by a

monocultural planted forest and was bordered on the North by a young

Common field-mouse (*Apodemus sylvaticus* L.), striped field-mouse (*A. agrarius* Pall. L.), yellow-necked field-mouse (*A. flavicollis* Melch. L.).

border of the sample plot was a cutline across which was an oak wood.

redbacked vole (*Clethrionomys glareolus* Schr  b.), field vole (*Micotus*

(1) A.V. Kukkova and V.P. Denisov participated in the research.

transl. Forests in Russia are frequently divided by cutlines into

rectangles call "kvartals" (usually 800m x 400m).

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1. The first section of the document discusses the background of the project, mentioning the collaboration between the University of California, Berkeley and the Chinese Academy of Agricultural Sciences. It highlights the importance of improving rice production in China and the role of the project in achieving this goal.

2. The second section provides a detailed description of the experimental design, including the selection of rice varieties, the establishment of experimental plots, and the application of different treatments. It also describes the data collection and analysis methods used in the study.

3. The third section presents the results of the experiments, showing significant improvements in rice yield and quality under certain treatment conditions. The results are interpreted in terms of their potential impact on Chinese agriculture and food security.

4. The fourth section concludes the report by summarizing the findings and discussing the implications of the research for future work. It emphasizes the need for continued research and collaboration between the two institutions to address the challenges of rice production in China.

The forest on the sample plot itself was composed mainly of pedunculate oak (*Q. robur* L) with a significant addition of small-leaved lime (*Tilia cordata* Mill.), some common birch (*Betula verrucosa* Ehrh.), and three species of maple: Norway (*A. platanoides*), common (*A. campestre* L), and very seldom Tartar (*A. tataricum* L). The underbrush consisted mainly of pedunculate oak, Norway maple, small-leaved lime, mountain ash (*S. aucuparia* L) and shrubs - hazelnut (*C. avellana* L), warty-barked spindle-tree (*Enonymus verrucosa* Scopoli) and spindle tree (*E. europea* L.). The grass cover with a predominance of ivy was very sparce. Frequent were: asarabacca (*Asarum europaeum* L.), goutweed (*Aegopodium podagraria* L.), common Solomon's seal (*Polygonatum multiflorum* Moench), wonder violet (*Viola mirabilis* L.), noctule (*Nyctalus* sp.), sage (*Pulmonaria* sp.), hairy sedge (*Carex hirta* L.); more rare appeared to be: orchid (*Plantanthera* sp.), bitter pea (*Lathyrus vernus*), and hedge woundwart (*Stachys sylvatica* L.). The forest floor was covered with numerous windfalls and a great number of holes of small rodents were found under the trees, under fallen trunks and also in many other places on the same plot.

In the area of our research the following species were recorded: Common field-mouse (*Apodemus sylvaticus* L.), striped field-mouse (*A. agrarius* Pall. L.), yellow-necked field-mouse (*A. flavicollis* Melch. L.), redbacked vole (*Clethrionomys glareolus* Schr  b.), field vole (*Microtus agrestis* L.), common vole (*M. arvalis* Pall., L.), and forest dormouse

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(Dyromys nitedula Pall. L.). The dominating species were the common field-mouse and the redbacked vole. In years of high number of common field-mice, the redbacked voles were significantly in decline, and vice versa, with a decline in the number of common field-mice, the number of redbacked voles was significantly higher, and moreover, striped field-mice were observed in the population.

In 1953 and 1955, when a very poor crop of tree seeds was observed, a seasonal change in the specific composition of inhabitants of the sample plot occurred. In the spring and summer the common field-mouse was the dominating species, however, in the fall (September), the number of common field-mice on the sample plot sharply decreased and the number of redbacks increased. However, during these changes the total number of animals within the sample plot (from May to September) was approximately constant.

Fig. 1. - Distribution of common field-mice and redbacked voles on the sample plot during the spring-summer period.

- 1 - places where common field-mice were caught;
- 2 - places where redbacked voles were caught;
- 3 - points where traps were placed;

The size of the circles shows the number of cases in which animals were trapped; shadowed area shows single catches.

Fig. 2. - Distribution of common field-mice and redbacked voles on the sample plot during the fall.

1 to 3 - the same as on Fig. 1.

4 - places where striped field-mice were trapped.

An analysis of colonies of common field-mice and redbacked voles showed that the distribution of animals within the sample plot was uneven. In the spring and summer the common field-mice occupied almost the entire plot, and were especially concentrated in certain parts of it, but the redbacked voles were distributed in separate small colonies (fig. 1). In the fall, the common field-mice occupied only separate, widely scattered areas, contrary to the redbacked voles which were dispersed within the entire territory and were concentrated mainly in places where before the common field-mice were concentrated (fig. 2). The marking showed that the same shelters were used successively by different species. During the summer, one of the main places of concentration in the sample plot was occupied by two adult females of the common field-mouse with a group of young and semiadult animals - males and females. In the fall a concentration of redbacked voles, representing mainly groups of adults of both sexes, apparently preparing for winter was observed in the same place.

During the entire period of our research, a significant part of the population of common field-mice as well as redbacked voles (in almost all

Fig. 3 - Distribution of common field-mice and reappearing winter
abundance by day during the fall.

Fig. 3 - The same as on Fig. 1.

- bisons were still living in this locality at the time.

age and sex groups) constituted migrants. Because of this fact the period of occurrence of one or another species on the sample plot did not exceed three months (in 1953 single specimens of the common field-mouse stayed on the sample plot for four months).

In 1956, during a high yield of tree seeds, berries and mushrooms, the dominating species from May till October was the common field-mouse, which in comparison to the years 1953 & 1955 differed in a greater degree of settledness; some animals marked in June were also trapped in October. Redbacked voles were observed only in small numbers during the spring-summer period, and in spite of an increase in their number towards the fall, they preserved their previous subordinate position.

Thus, during years of variable condition of food resources the structure of inhabitation of a territory by forest mouse-like rodents changes also. In the case discussed, a bad crop of tree seeds was the cause of increased mobility of common field-mice, emigrating from the spring-summer range (reproduction ceased already during the first half of the summer). Abandoned shelters were very quickly taken over by redbacked voles (less dependent on abundance of seeds); the tempo of their immigration to the sample plot from adjacent areas increased especially sharply in the fall. When the condition of food resources was good the common field-mice preserved their settledness, and the period of their reproduction was prolonged. The occupation of shelters apparently

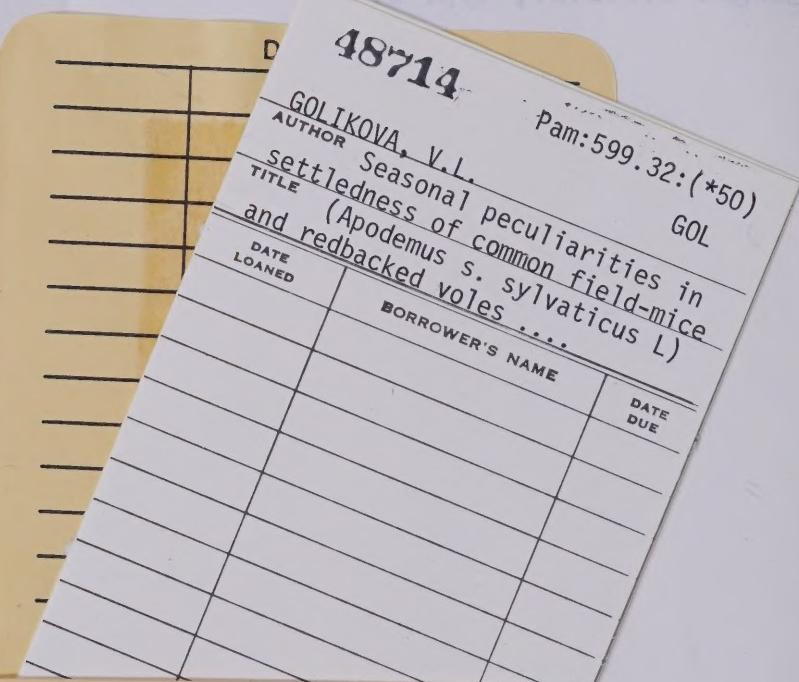
prevents the immigration of redbacked voles onto the sample plot, and in the fall their number increases only insignificantly.

Analogous cases of food migrations by common field-mice were mentioned by S.N. Varshavski (Varshavski and others, 1949). Other reports on competition for shelters among common field-mice and house mice are also known (Lavrova and Naumova, 1955).

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